



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/045,153	01/15/2002	Pierre Perichon	MGRN:400	8863
7590 11/06/2003 PARKHURST & WENDEL, L.L.P. 1421 Prince Street, Suite 210 Alexandria, VA 22314-2805			EXAMINER KITOV, ZEEV	
			ART UNIT 2836	PAPER NUMBER

DATE MAILED: 11/06/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/045,153

Applicant(s)

PERICHON, PIERRE

Examiner

Zeev Kitov

Art Unit

2836

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01/15/02.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 - 22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 - 22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 January 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Abstract

The abstract of the disclosure is objected to because of use of legal phraseology. An example of that is a word "means". Correction is required. See MPEP § 608.01(b).

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

Claim 7 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. A reason for that is in a following phrase: "second control means commanding opening of said at least one secondary breaking device if a secondary fault has been detected and if a current flowing in said breaking device is lower than the preset opening current threshold, the second detection means detecting a secondary fault when a second secondary fault threshold is exceeded by a signal representative of a current flowing in the at least one secondary breaking device". According to the claim language, the secondary breaking device opens when a second secondary fault threshold is exceeded, while the current is still below the preset opening threshold. It is hard to understand how both conditions, as set in Claim 7 for opening the secondary breaking device, i.e. presence of an overcurrent and the overcurrent being

Art Unit: 2836

lower than the preset opening current threshold, could be simultaneously satisfied. The Specification text (page 13, lines 6 – 20) does not help to clarify an issue. For purpose of examination the limitation was interpreted as follows: "second control means commanding opening of said at least one secondary breaking device if a secondary fault has been detected and if a current flowing in said breaking device at previous stage was lower than the preset opening current threshold, the second detection means detecting a secondary fault when a second secondary fault threshold is exceeded by a signal representative of a current flowing in the at least one secondary breaking device".

Claim 8 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. A reason for that is that the claim recites following: "means for detecting a polar fault corresponding to at least one current flowing in at least one conductor of said at least one secondary breaking device". A meaning of "a polar fault" is not clear, especially with respect to AC voltages and currents. Specification does not explain it, but just recites the claim statement. For purpose of examination, it was assumed that the "polar fault corresponding to at least one current" is the fault in one of a three phase lines.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1- 3, 6, 10 – 12, 19 and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by Baumann et al. (US 3,970,898). Baumann et al. disclose all the elements of Claim 1 including an electrical distribution device having an input for connection of an incoming electrical line (110kW input in Fig. 1), electrical protection means connected to the input and having electrical distribution feeders designed to supply electrical loads; the protection means include: a main part comprising main breaking means (element 8 in Fig. 1) connected to the input for connecting the incoming electrical line (110kW in Fig. 1), and main control means for controlling opening and closing of the main breaking means (elements 22 and 54 in Fig. 1), an electrical power distribution line connected to the main breaking means of the main part, and a secondary part separated from the main part and including at least one secondary breaking device (elements 14 and 19 in Fig. 1) and secondary control means (elements 32,23, 46, 55, 33, 24 and 47 Fig. 1) to command opening and closing of at least one secondary breaking device, the secondary breaking devices being connected to said distribution line and to at least one electrical distribution feeder, the secondary control means enabling opening of at least one secondary breaking device. It further discloses enabling opening of at least one secondary breaking device if a current flowing in said breaking device is lower than a preset opening current threshold (Fig. 5 structure and description, col. 14, line 55 – col. 15, line18). Disappearance of current I'_2 causes the associated switch to move to the off

Art Unit: 2836

position. As to requirement for a current being lower than a preset opening current threshold, the threshold is inherently set in an input of AND gate (element 277 in Fig. 5), as its logic 1_{high} level.

The claim is presented in a means and function form. According to 35 U.S.C. 112, 6th paragraph, "An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof". (emphasis added).

The "means or step plus function limitation should be interpreted in a manner consistent with the specification disclosure.

Factors supporting an equivalency conclusion:

A) The prior art element performs the identical function specified in the claim in substantially the same way, and produces substantially the same results as the corresponding element disclosed in specification. *Kemco Sales, Inc. v. Control Papers Co.*, 208 F.3d 1352, 54 USPQ2d 1308 (FED. Cir. 2000).

B) A person of ordinary skill in the art would have recognized the interchangeability of the element shown in the prior art for the corresponding element disclosed in the specification. *Caterpillar Inc. v. Deer & Co.*, 224 F.3d 1374, 56 USPQ2d 1305 (FED. Cir. 2000).

C) There are insubstantial differences between the prior art element and the corresponding element disclosed in the specification. *IMS Technology, Inc. v. Haas Automation, Inc.*, 206 F.3d 1422, 1436, 54 USPQ2d 1129, 1138 (Fed. Cir. 2000).

Regarding Claim 2, Baumann et al. discloses first detection means (elements 31 and 22 in Fig. 12) detecting a main fault current and first control means (element 8 in Fig. 1) commanding opening of the main breaking means. The first detection means detecting a main fault when a first main fault current threshold is exceeded by a signal representative of a current flowing in the main breaking means (col. 14, lines 4 - 54). As to opening of the main breaking means during a preset first time, it is inherent in Fig. 4 circuit action principle, since activation of a delayed drop-out relay (element 204 in Fig. 4) is possible only when the current to the relay is provided for some predetermined time (relay activation delay time).

Regarding Claim 3, Baumann et al. disclose the first control means command opening of the main breaking means subsequent to detection of a main fault and after a time delay having a preset second duration. In this regard, the second time interval is presented by a delay of activation of a switch with a motor spring drive (element 208 in Fig. 4). Such delay is inherent property of any switching mechanism.

Regarding Claim 6, Baumann et al. disclose the main breaking means having power semiconductors (elements 203, 205, 213 and 215 in Fig. 4), which must be powerful enough to operate the relays (elements 204 and 214 in Fig. 4) and to protect transistors (elements 203 and 214 in Fig. 4) against inductive voltage peaks (col. 14, lines 4 – 50).

Regarding Claim 10, Baumann et al. disclose the secondary breaking device as an electromagnetic relay (element 231 in Fig. 5).

Regarding Claim 11, Baumann et al. disclose the secondary breaking device having electronic power components (elements 230, 233, 239 and 241 in Fig. 5), which must be powerful enough to operate the relays (elements 231 and 240 in Fig. 5) and to protect transistors (elements 230 and 239 in Fig. 5) against inductive voltage peaks (col. 15, lines 7 – 30).

Regarding Claim 12, Baumann et al. disclose the secondary control means having communication means connected to the communication line and being able to transmit closing information to close the secondary device. Each secondary device of Baumann et al. is provided with communication equipment (elements 46, 47 and 55 in Fig. 1) and corresponding lines carrying closing information to close the secondary device (col. 14, lines 27 – 50, col. 15, line 19 – 30). As to means plus function form of the claim, the reference provides a functional equivalent of the invention.

Factors supporting an equivalency conclusion:

A) The prior art element performs the identical function specified in the claim in substantially the same way, and produces substantially the same results as the corresponding element disclosed in specification. *Kemco Sales, Inc. v. Control Papers Co.*, 208 F.3d 1352, 54 USPQ2d 1308 (FED. Cir. 2000).

B) A person of ordinary skill in the art would have recognized the interchangeability of the element shown in the prior art for the corresponding element

disclosed in the specification. *Caterpillar Inc. v. Deer & Co.*, 224 F.3d 1374, 56 USPQ2d 1305 (FED. Cir. 2000).

C) There are insubstantial differences between the prior art element and the corresponding element disclosed in the specification. *IMS Technology, Inc. v. Haas Automation, Inc.*, 206 F.3d 1422, 1436, 54 USPQ2d 1129, 1138 (Fed. Cir. 2000).

As per Claim 19, it differs from Claim 1, rejected accordingly, by its requirement of secondary lines being connected to distribution lines. Baumann et al. disclose secondary lines being connected to distribution lines (see Fig. 17, col. 30, line 32 – col. 31, line 16).

Regarding Claim 20, Baumann et al. disclose a protection process including following steps: a first step of detection of an electrical fault in main breaking means (col. 8, lines 53 – 57), a second step of detection of an electrical fault in secondary breaking means connected by a distribution line to the main breaking means (col. 11, lines 26 – 32, elements 120 – 125 in Fig. 2), and a time delay step (col. 11, lines 32 – 33), an opening step of the main breaking means (element 31 in Fig. 1, col. 13, lines 58 – 62). They further disclose an opening step of the secondary breaking means when a current flowing in these means is lower than a preset opening current threshold value. (Fig. 5 structure and description, col. 14, line 55 – col. 15, line 18). Disappearance of current I_2 causes the associated switch to move to the off position. As to requirement for a current being lower than a preset opening current threshold, the threshold is inherently set in an input of AND gate (element 277 in Fig. 5), as its logic 1_{high} level. And they further disclose a first closing step of the main breaking means after a preset time

delay (element 208 is deactivated by signal E1 after time delay provided by elements 210 and 209).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 4, 5, 7, 8 and 13 – 16, 21 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Baumann et al. in a view of Zulaski (US 5,303,112). As was stated above, Baumann et al. disclose all the elements of Claim 1. However, regarding Claim 5, they do not disclose the main part having a tie breaker connected to the input. Zulaski et al. disclose an electrical distribution system utilizing a complex system of electrical feeder lines providing electrical energy for a large number of branch circuits protected by a circuit breaker. It further discloses a tie breaker (element R0 in Fig. 3, col. 4, line 64 – col. 5, line 7). According to a diagram Fig. 3, the tie breaker R0 is connected in series with the circuit breakers SW1 - SW4. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the Baumann et al. solution by adding the tie breaker according to of Zulaski et al., because as well known in the art, it is convenient to provide tie lines between feeder

Art Unit: 2836

circuits so that a feeder line which loses power may be alternatively supplied by a different feeder line which remains capable of supplying electrical power.

As per Claim 7, it differs from Claim 1 by its requirement of the secondary breaking device being able additionally to detect a secondary fault of overcurrent. Zulaski et al. discloses the secondary control means include second detection means (element 10 in Fig. 1 and block 108 in Fig. 5) detecting a secondary fault current flowing in at least one secondary breaking device (col. 4, lines 15 – 45), and second control means commanding opening of said at least one secondary breaking device if a secondary fault has been detected (col. 6, line 46 - col. 7, line 14). It further discloses that the both primary and secondary fault detection occurs in the secondary control locations (col.8, lines 32 – 34). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have further modified the Baumann et al. solution by adding the secondary fault detection in the secondary location according to Zulaski et al., because as Zulaski et al. state (col.m 2, lines 9 – 24), local detection of the faults (at a secondary location) is essential for the master station since it provides a clear data of the fault location and as a result, the remote terminal units and the distribution switches along the network can be utilized to efficiently locate, isolate and restore the system.

Regarding Claim 8, Zulaski et al. disclose means for detecting a fault in a single phase corresponding to at least one current flowing in at least one conductor of said at least one secondary breaking device (col. 3, lines 66 – 68, col. 7, lines 47 – 52).

Regarding Claims 13 and 14, Zulaski et al. disclose a central unit (element 30 in Fig. 1) connected to the communication means to receive status information and to command opening and/or closing of at least one secondary breaking device (see block diagram Fig. 5, col. 6, line 46 – col. 7, line 26).

Regarding Claim 15, Zulaski et al. disclose the secondary control means sending a signal on the communication line to command opening of the main breaking means when an electrical fault is detected in a feeder supplied by a secondary breaking device and to command closing of the main breaking means when opening of a secondary breaking device has been commanded following a fault (Fig. 5, col. 6, line 46 – col. 7, line 26).

As per Claim 16, it differs from Claim 15 rejected accordingly by its requirement of placing the secondary part of the system (i.e secondary circuit breaker) in a building electrical distribution box. Examiner takes an Official Notice that the secondary circuit breakers are widely used in the building environment. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have further modified the Baumann et al. solution by placing the secondary control and circuit breaker in the building environment for protection of the building electrical wiring and placing them in the building electrical distribution box, because it is widely excepted practice today.

Regarding Claim 21, Baumann et al. do not disclose a second opening step of the main breaking means commanded by transmission of a priority opening command signal. Neither they disclose a second closing step of the main breaking means after an

end of transmission of the priority signal step. Zulaski et al. disclose a second opening step of the main breaking means commanded by transmission of a priority opening command signal on a communication line connected between secondary breaking means and the main breaking means, the priority signal being transmitted when a fault current flowing in a secondary breaking device is detected, a second closing step of the main breaking means after an end of transmission of said priority signal step (blocks 108 and 126 in Fig. 5, and periodic current interruption shown in Fig. 4, col. 4, line 64 – col. 5, line 56).

As per Claim 22, it differs from Claims 20 and 21, rejected accordingly, by its additional requirement of a second step of opening of the secondary breaking means when a current flowing in these means is lower than a preset opening current threshold value following detection of a fault at the first detection step. Baumann et al. disclose opening of at least one secondary breaking device if a current flowing in said breaking device is lower than a preset opening current threshold (Fig. 5 structure and description, col. 14, line 55 – col. 15, line 18). The opening follows detection of the fault at the first detection step.

Regarding Claim 4, Examiner takes an Official Notice, that a low power relays intended for activation of isolator switches, such as element 204 in Fig. 4, mostly have a delay time of about 3 - 5 milliseconds and almost never exceed 10 milliseconds requirement of the claim.

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Baumann et al. in a view of Zulaski et al. and further in a view of Farrington (US 4,996,646). As was stated above, Baumann et al. and Zulaski et al. disclose all the elements of Claims 1 and 7. However, regarding Claim 9, they do not disclose the second detection means detecting a ground fault current flowing in at least two conductors of said at least one secondary breaking device. Farrington discloses the functional equivalent of the detection means detecting a ground fault current flowing in at least two conductors of said at least one secondary breaking device (Fig. 14, col. 10, line 42 – col. 11, line 11). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have further modified the Baumann solution by adding the detection means detecting a ground fault current flowing in at least two conductors of said at least one secondary breaking device according to Farrington, because as well known in the art, the ground fault in the electrical distribution systems is a common type of fault that should be protected against.

Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Baumann et al. in a view of Cordray et al. (US 6,577,963). As was stated above, Baumann et al. disclose all the elements of Claim 1. However, regarding Claim 17, they do not disclose the secondary control means of the secondary part including electrical protection functions and communication and automatic control functions to command secondary breaking devices. Cordray et al. disclose the secondary control means performing electrical protection functions and communication and automatic control

Art Unit: 2836

functions to command secondary breaking devices (Fig. 1 – 3 and 6, col. 3, line 57 – col. 4, line 50). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have further modified the Baumann et al. solution by placing the secondary control system into a building automation and communication module performing automatic control functions to command secondary breaking devices, because as Cordray et al. state (col. 1, lines 14 – 47), there is need in housing buildings for automatic control of the circuit breakers, which would improve the speed of electrical power restoration after the fault is cleared. Additionally, it is the least expensive solution for a placement of the circuit breakers compared to other options, such as their placement in location of a transformer.

Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Baumann et al. in a view of Miller et al. (US 5,053,583). As was stated above, Baumann et al. disclose all the elements of Claims 1 and 12. However, regarding Claim 18, they do not disclose a flat cable having at least five conductors including a communication lines and a ground line. Miller et al. disclose an electric power distribution line with more than two conductors (see Fig. 2A and 2B) including a communication lines with at least two conductors (col. 1, lines 46 - 48), and an electrical earth or ground line (col. 1, lines 46 – 48) including at least one conductor are arranged in a flat cable having more than five conductors. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the Baumann et al. solution by adding the flat cable with more than five conductors according to Miller et al., because

as well known in the art, the flat cable is quite common solution today due its low cost and substantial physical flexibility in wiring, which is especially important when some modifications to original wiring should be made in a building.


Conclusion

The prior art made of record not relied upon is considered pertinent to applicant's disclosure: US 5,550,751, US 5,973,899, US 4,297,740, US 3,673,425, US 5,341,268.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Zeev Kitov whose telephone number is (703) 305-0759. The examiner can normally be reached on 8:00 – 4:30. If attempts to reach examiner by telephone are unsuccessful, the examiner's supervisor, Brian Sircus can be reached on (703) 308-3119. The fax phone number for organization where this application or proceedings is assigned is (703) 872-9306 for all communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Z.K.
10/24/2003



BRIAN SIRCUS
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800